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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,448	12/03/2003	Yung-Jun Park	1349.1181	5426

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EXAMINER

LEE, JOHN W

ART UNIT

PAPER NUMBER

2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/725,448	Applicant(s) PARK ET AL.	
	Examiner John Wahnkyo Lee	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9 and 11-13 is/are rejected.
- 7) ☒ Claim(s) 4 and 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. This application claims benefit to provisional application No. 60/430,333, filed on 3 December 2002, in a language other than English. An English translation of the non-English language provisional application and a statement that the translation is accurate must be filed in provisional application No. 60/430,333. See 37 CFR 1.78(a)(5). The English translation and a statement that the translation is accurate required by 37 CFR 1.78(a)(5) is missing. Accordingly, applicant must supply 1) the missing English translation and a statement that the translation is accurate in provisional application No. 60/430,333 and 2) in the present application, a confirmation that the translation and statement were filed in the provisional application. If 1) and 2) are not filed (or the benefit claim withdrawn by the filing of an amendment or Supplemental Application Data Sheet) prior to the expiration of the time period set in this Office action, the present application will be abandoned. See 37 CFR 1.78(a)(5)(iv).

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 5-6, 8, and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (US 5,963,665).

Regarding claim 1, Kim discloses that the frame histogram calculator (fig. 6-402) calculates the probability density function based on the given image {X} composed of L discrete gray level (col. 3, lines 64-67; col. 6, lines 66-67; col.7, lines 1-2) and the frame mean calculator calculates the mean of the input image {X} as denoted X_m (fig. 6-404; col.7, lines 3-4). The first (fig. 6-408) and second CDF (fig. 6-410) calculator receive the first and second PDF functions, respectively, and calculate CDF function for each PDF function (col.4, lines 30-38; col. 7, lines 10-15). After receiving the mean level X_m output by the frame mean calculator, the brightness compensator (fig. 6-414) adds a brightness compensation value Δ corresponding to the mean brightness of an input image (fig. 4A and 4B) and outputs the compensated mean level B_m (fig. 5A and 5B; col. 5, line 9; col. 8, lines 63-67). The brightness compensation value Δ is a preset by

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use of a predetermined compensation function according to the brightness value (col. 5, line 10-13). After receiving the compensated mean level B_m , the input sample X_k , and the cumulative density function value from the first CDF calculator, the first mapper (fig. 6-416) maps the input sample X_k (col. 5, lines 1-9; col. 9, lines 1-7). The second mapper (fig. 6-418) maps the input sample X_k using the compensated mean level B_m , the input sample X_k , and the cumulative density function value from the second CDF calculator (col. 5, lines 1-24; col. 9, lines 7-14).

Regarding claim 3, Kim teaches that the first and second CDF calculator (fig. 6-408 and 410) calculate the cumulative density functions using the probability density function (col. 4, lines 28-38).

Regarding claim 5 and 11, Kim discloses a frame mean calculator calculates the mean of the input image $\{X\}$ as denoted X_m (fig. 6-404; col. 7, lines 3-4). After receiving the mean level X_m output by the frame mean calculator, the brightness compensator (fig. 6-414) adds a brightness compensation value Δ , that is a preset by use of a predetermined compensation function according to the brightness value (col. 5, line 10-13), corresponding to the mean brightness of an input image (fig. 4A and 4B) and outputs the compensated mean level B_m (fig. 5A and 5B; col. 5, line 9; col. 8, lines 63-67).

Regarding claim 6 and 12, Kim discloses a brightness compensation value Δ that is a preset by use of a predetermined compensation function according to the brightness value (fig. 4A and fig. 4B; col. 5, line 10-13).

Regarding claim 8, Kim discloses that the frame histogram calculator (fig. 6-402) calculates the probability density function based on the given image $\{X\}$ composed of L discrete gray level (col. 3, lines 64-67; col. 6, lines 66-67; col.7, lines 1-2) and the frame mean calculator calculates the mean of the input image $\{X\}$ as denoted X_m (fig. 6-404; col.7, lines 3-4). The first (fig. 6-408) and second CDF (fig. 6-410) calculator receive the first and second PDF functions, respectively, and calculate CDF function for each PDF function (col.4, lines 30-38; col. 7, lines 10-15). After receiving the mean level X_m output by the frame mean calculator, the brightness compensator (fig. 6-414) adds a brightness compensation value Δ corresponding to the mean brightness of an input image (fig. 4A and 4B) and outputs the compensated mean level B_m (fig. 5A and 5B; col. 5, line 9; col. 8, lines 63-67). The brightness compensation value Δ is a preset by use of a predetermined compensation function according to the brightness value (col. 5, line 10-13). After receiving the compensated mean level B_m , the input sample X_k , and the cumulative density function value from the first CDF calculator, the first mapper (fig. 6-416) maps the input sample X_k (col. 5, lines 1-9; col. 9, lines 1-7). The second mapper (fig. 6-418) maps the input sample X_k using the compensated mean level B_m , the input sample X_k , and the cumulative density function value from the second CDF calculator (col. 5, lines 1-24; col. 9, lines 7-14).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665) in view of Cahill (US 7,103,219).

Regarding claims 2 and 9, Kim discloses and teaches all the claim limitations of claims 1-2, and 8-9 except comparing the calculated function with values of the calculated PDF in claim 2 and 9. However, Cahill discloses and the plurality of probability density function is compared to check if it meets and is acceptable level of error respecting the histogram data (col. 6, lines 38-41). Moreover, Cahill teaches using Gaussian density function, which is an example of a probability density function having increasing and decreasing part, for an estimate of the brightness probability density function (col.8 lines 31-67; col. 9, lines 63).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Cahill's method in Kim's image enhancing method to preserve the mean brightness of the given image while the contrast of the image is enhanced as suggested by Kim (col. 2, lines 1-2).

7. Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,963,665) in view of Kim (US 6,018,588).

Regarding claims 7 and 13, Kim discloses and teaches all the claim limitations of claims 1 and 8 except the detail claim limitations of claims 7 and 13. However, Kim discloses using pixel values based on grayscale value of colors- R, G, B, for the invention (fig.1 and 4; claims 5 and 6).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Kim's method in Kim's image enhancing method to enhance image quality by varying a color signal based on the adjusted luminance as suggested by Kim (col. 2, lines 9-12).

Allowable Subject Matter

8. Claims 4 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. It seems claims 4 and 10 appears to be free from prior art.

Conclusion

9. No claims are allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Wahnkyo Lee whose telephone number is (571)

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272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John W. Lee
(AU 2624)



JINGGE WU
SUPERVISORY PATENT EXAMINER